

REMARKS

Claims 1-15, 33, 40 and 41 are pending at the present time. In the Office Action dated December 1, 2004 claims 14-15 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,399,234 to Yu et al. ("the Yu patent"). Claims 14-15 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,007,408. Claims 1-15, 33, and 40-41 were rejected as being based upon a defective reissue oath/declaration under 35 U.S.C. 251.

The double patenting rejection is not proper. The examiner has rejected the present reissue application as being unpatentable over U.S. Patent No. 6,007,408. However, U.S. Patent No. 6,007,408 is the original patent that was surrendered and undergoing prosecution in the present reissue application. Accordingly, it is not proper to reject pending claims in a reissue application over claims in its original patent that is undergoing reissue examination using obviousness-type double patenting. It is noted that in *In re Doyle*, 293 F.3d 1355, 63 USPQ2d 1161 (Fed Cir. 2002), the obviousness-type double patenting rejection of the claims in the reissue application was in view of another issued patent other than the original patent surrendered and undergoing reissue examination..

The examiner has also rejected claims 1-15, 33, and 40-41 as being based upon a defective reissue oath/declaration under 35 U.S.C. 251. Applicant will follow the guidelines outlined in M.P.E.P. § 1444, and will wait until the present application is in condition for allowance before submitting a cumulative supplemental reissue oath/declaration.

The embodiments disclosed in the present application will now be discussed in comparison to the cited references. Of course, the discussion of the disclosed embodiments, and the discussion of the differences between the disclosed embodiments and the cited references, do not define the scope or interpretation of any of the claims. Instead, such discussed differences merely help the Examiner appreciate important claim distinctions discussed thereafter.

Embodiments disclosed in the present application are directed to methods for stopping mechanical and chemical-mechanical polishing (CMP) of a substrate at a desired endpoint. In one embodiment, a polishing machine has a platen, a polishing pad positioned on the platen, and a polishing medium located at a planarizing surface of the polishing pad. The

polishing machine also has a substrate carrier that may be positioned over the planarizing surface of the polishing pad, and at least one sensor that monitors a characteristic of a polishing component that is influenced by the type of material being removed from the substrate. In one embodiment, the sensor is a temperature sensor that senses the temperature of the byproducts produced during polishing. For example, the temperature may be sensed using an optical sensor that senses the emission spectrum from the byproducts. In another embodiment, the characteristic of the byproducts produced during polishing indicative of the material removed from the substrate is the composition of the byproducts. In one embodiment, the composition of the byproducts may be determined using a spectroscopic technique such as infrared spectroscopy which analyzes the emission spectrum of the byproducts. In yet another embodiment, the characteristics of the byproducts produced during polishing indicative of the material removed from the substrate is the color of the byproducts.

The examiner has cited the Yu patent. The Yu patent discloses a CMP process in which the characteristics of the polishing slurry used to polish a substrate are determined using acoustic waves. During polishing of the substrate, the chemical composition of the slurry changes during polishing. The density of the slurry changes in proportion to the change in the chemical composition. The density of the slurry is determined by propagating acoustic waves in the slurry and measuring the velocity of such waves in the slurry. The velocity of the acoustic waves are proportional to the density of the slurry. Thus, the Yu patent does not disclose or fairly suggest analyzing an emission spectrum of the polishing slurry or byproducts therein to determine the composition, color, or temperature of the byproducts produced during the polishing of the substrate. In fact, the Yu patent appears to teach away from analyzing an emission spectrum of the byproducts produced during polishing by employing an acoustic technique which does not appear to produce an emission spectrum characteristic of the byproducts.

Turning now to the claims, the patentably distinct differences between the cited references and the claim language will be specifically pointed out. Claim 14 recites “[a] method for stopping polishing of a substrate at a desired endpoint, comprising: monitoring a characteristic of a polishing component indicative of material being removed from a planarized surface of the substrate, wherein the polishing component comprises byproducts produced by

polishing the substrate and the characteristic is an *emission spectrum of the byproducts*, and wherein monitoring a characteristic comprises analyzing the emission spectrum; and stopping removal of material from the substrate when the characteristic of the polishing component that is monitored indicates the material being removed from the planarized surface is at the desired endpoint of the substrate.” As discussed above, the Yu patent does not disclose or fairly suggest monitoring an emission spectrum of the byproducts produced by polishing the substrate.

Applicant also notes that presently amended claim 14 is still a linking claim that is broad enough to link at least some of the elected species and nonelected species of the original patent application.

All of the claims remaining in the application (claims 1-14, 33, and 40-41) are now clearly allowable. Favorable consideration and a timely Notice of Allowance are earnestly solicited.

Respectfully submitted,

DORSEY & WHITNEY LLP



Marcus Simon
Registration No. 50,258
Telephone No. (206) 903-8787

MS:clr

Enclosures:

Postcard

Fee Transmittal Sheet (+ copy)

DORSEY & WHITNEY LLP
1420 Fifth Avenue, Suite 3400
Seattle, WA 98101-4010
(206) 903-8800 (telephone)
(206) 903-8820 (fax)